

# FVA-3150

VARIABLE ATTENUATOR



40G  
100G

Fully programmable, highly accurate automated BER testing—ideal for singlemode and multimode applications.

## KEY FEATURES

- Outstanding spectral uniformity ( $\pm 0.03$  dB)
- Ideal for BER testing and system verification
- Monitor output option
- Fast settling time for optimized efficiency
- Programmable—using the front-panel buttons, or the built-in RS-232 or GPIB interfaces

## APPLICATIONS

- BER testing
- System/component loss simulation
- EDFA characterization
- Accurate power-level monitoring
- Instrument calibration

SPEC SHEET

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## FIRST-CLASS BUILDING BLOCK FOR ASSESSING SIGNAL ATTENUATION

High-quality components and meticulous calibration procedures make the FVA-3150 Variable Attenuator the instrument of choice for repeatable and accurate attenuation settings (up to 65 dB). The FVA-3150 meets system and component manufacturers' need for component and system loss simulation, instrument calibration, power meter linearity measurement and spectral tuning. Its ultra-low insertion loss enables you to optimize the loss budget.

The FVA-3150 is configured for singlemode or multimode fibers. Use it as a stand-alone instrument or mounted on a 19-inch rack (optional).



*FVA-3150 with monitor port.*

### Rugged and Reliable

Flexible, fully programmable and built for both singlemode and multimode applications, the FVA-3150 features a truly rugged design that uses only two moving parts—a rotating motor for the shutter and a linear motor for the filter—and state-of-the-art electronics.

The attenuator's optomechanical assembly was tested at its highest operating temperature, at a very high relative humidity level, and with a continuous incident optical power of 23 dBm at 1550 nm—the equivalent of eight years of operation in typical bit-error-rate (BER) testing conditions. Results showed that an FVA-3150 can withstand 24/7 operation for years without requiring maintenance.

### Key Features

#### Attenuation Modes

Choose from three attenuation modes: absolute (including insertion loss), relative (in reference to the 0.00 dB level) or X+B (relative display to any selected reference value).

#### Monitor port

The monitor output port enables accurate power-level monitoring at the receiver end of your system.

#### Programmable and Remote-Controllable

Using the front-panel buttons, cycle through a repeatable sequence of up to 100 attenuation steps, with a dwell time of up to 1000 hours per step. The Program mode is ideal for automated BER testing and linearity measurements.

Standard GPIB and RS-232 interface and control codes enable remote operation from a PC or test station. Program your own software solutions for complex test procedures and benefit from added computer capabilities. LabVIEW® drivers are available.

SPECIFICATIONS <sup>a</sup>

Singlemode configurations		
Description	Without monitor port	With monitor port
Models	FVA-3150-B	FVA-3150-BM
Fiber type (μm)	9/125	9/125
Wavelength range (nm)	1250 to 1650	1250 to 1650
Max. attenuation <sup>b</sup> (dB)	≥ 65	≥ 65
Insertion loss <sup>c,d</sup> (dB)	Typical 1.0 Max. 1.5	1.5 2.2
Attenuation setting resolution (dB), typical	0.002	0.002
Attenuation linearity <sup>e</sup> (dB)	±0.1	±0.1
Attenuation repeatability <sup>f</sup> (dB), 2σ	±0.01	±0.01
Spectral uniformity, 1510 nm to 1605 nm <sup>g</sup> (dB)	±0.05	±0.05
Spectral uniformity, 1450 nm to 1630 nm <sup>g</sup> (dB), typical	±0.09	±0.09
PDL <sup>h</sup> (dB) peak-to-peak	0.15	0.2
Return loss <sup>c,i</sup> (dB), typical	60	60
Max. input power (dBm)	23	23
Transition speed (dB/s), typical	up to 23	up to 23
Shutter isolation (dB)	> 100	> 100
Monitor output <sup>j</sup> (dB), typical	N/A	12.8
Multimode configurations		
Description	Without monitor port	With monitor port
Models	FVA-3150-C; D	FVA-3150-CM; DM
Fiber type (μm)	50/125, 62.5/125	50/125, 62.5/125
Wavelength range (nm)	700 to 1350	700 to 1350
Max. attenuation (dB)	≥ 60	≥ 60
Insertion loss <sup>c,d</sup> (dB)	Typical 1.3 Max. 2.0	1.5 3.0
Attenuation setting resolution (dB), typical	0.002	0.002
Attenuation linearity <sup>e</sup> (dB)	±0.1	±0.1
Attenuation repeatability <sup>f</sup> (dB), 2σ	±0.01	±0.01
Return loss <sup>c,d</sup> (dB), typical	40	40
Max. input power (dBm)	20	20
Transition speed (dB/s), typical	up to 23	up to 23
Shutter isolation (dB), typical	> 90	> 90
Monitor output <sup>j</sup> (dB), typical	N/A	12.8

## NOTES

- a. At 23 °C ± 1 °C.
- b. At 1550 nm and below.
- c. Measured at 1310 nm and 1550 nm for singlemode units, measured at 850 nm for multimode units.
- d. Excluding connectors.
- e. Measured at 1310 nm and 1550 nm (up to 60 dB) for singlemode units and at 850 nm and 1300 nm (up to 50 dB) for multimode units, with non-polarized light.
- f. Up to 45 dB attenuation.
- g. For 20 dB attenuation relative to 0 dB attenuation.
- h. Up to 20 dB attenuation. At 1550 nm.
- i. For FC/APC connectors.
- j. Ratio between output port and monitor port.

## GENERAL SPECIFICATIONS

Size (H X W X D)	117 mm X 222 mm X 333 mm	(4 5/8 in X 8 3/4 in X 13 1/8 in)
Weight	2.6 kg	(5.8 lb)
Temperature Operating Storage	0 °C to 40 °C -40 °C to 70 °C	(32 °F to 104 °F) (-40 °F to 158 °F)
Relative humidity	0 % to 80 % noncondensing	
Instrument drivers	LabVIEW™ drivers and SCPI commands	
Remote control	GPIB (IEEE-488.1, IEEE-488.2), RS-232	
Standard accessories	User guide, Certificate of Compliance, Certificate of Calibration and AC power cord	

## ORDERING INFORMATION

## FVA-3150-XX-XX

## Model

FVA-3150-B = 9/125 µm  
 FVA-3150-C = 50/125 µm  
 FVA-3150-D = 62.5/125 µm  
 FVA-3150-BM = 9/125 µm with monitor output  
 FVA-3150-CM = 50/125 µm with monitor output  
 FVA-3150-DM = 62.5/125 µm with monitor output

Example: FVA-3150-BM-EI-EUI-89

## Connector

EI-EUI-28 = UPC/DIN 47256  
 EI-EUI-76 = UPC/HMS-10/AG  
 EI-EUI-89 = UPC/FC narrow key  
 EI-EUI-90 = UPC/ST  
 EI-EUI-91 = UPC/SC  
 EI-EUI-95 = UPC/E-2000  
 EI-EUI-98 = UPC/LC  
 EA-EUI-28 = APC/DIN 47256 <sup>a</sup>  
 EA-EUI-89 = APC/FC narrow key <sup>a</sup>  
 EA-EUI-91 = APC/SC <sup>a</sup>  
 EA-EUI-95 = APC/E-2000 <sup>a</sup>  
 EA-EUI-98 = APC/LC <sup>a</sup>

## Note

a. Only available for singlemode models.

EXFO Headquarters > Tel.: +1 418 683-0211 | Toll-free: +1 800 663-3936 (USA and Canada) | Fax: +1 418 683-2170 | info@EXFO.com | [www.EXFO.com](http://www.EXFO.com)

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